

WHAT IS CLAIMED IS:

- 1                   1.     A telecommunication system for providing telecommunication  
2 services, including video, telephony and computer network services, to a group of end  
3 user sites connected to a loop-through cable distribution sytem, comprising:  
4                   a headend system which provides said telecommunication services in the  
5 form of telecommunication signals, said telecommunication signals comprising a video  
6 signal;  
7                   a service module in communication with said headend system and adapted  
8 to receive said telecommunication signals from said headend system and provide said  
9 telecommunication signals from said headend system to said group of end user sites, said  
10 service module comprising:  
11                   processing means for processing telecommunication service  
12 requests from said end user sites;  
13                   splitting means for receiving said video signal from said headend  
14 system and splitting said video signal into a plurality of video signals, one for  
15 each of said end user sites;  
16                   channel formatting means for each of said end user sites, said  
17 channel formatting means for receiving one of said plurality of video signals,  
18 extracting a video channel from said one of said plurality of video signals, said  
19 video channel being requested by one of said end user sites, demodulating said  
20 video channel from its modulated frequency to baseband, and creating an output  
21 video channel for said one of said end user sites by remodulating said video  
22 channel from baseband to a predetermined frequency, said predetermined  
23 frequency being different for each of said end user sites;  
24                   summing means for summing said output video channel from each  
25 of said channel formatting means into a composite video signal comprising each  
26 of said output video channels modulated to different frequencies;  
27                   a loop-through cable communication connection which communicates said  
28 composite video signal from said summing means to each of said end user sites;  
29                   coupling means for coupling said communication connection to an end  
30 user site;  
31                   filter means for filtering said output video channel for said end user site  
32 from said composite video signal, creating an end user video signal; and

33                   a customer interface device which receives said end user video signal and  
34 transmits said end user video signal to a video signal viewing apparatus.

1                   2.       The system as recited in claim 1, wherein said telecommunication  
2 signals from said headend system carries analog signals, digital signals, digitally  
3 compressed signals, or any combination of analog, digital, and digitally compressed  
4 signals.

1                   3.       The system as recited in claim 1, wherein channel formatting  
2 means further comprises decoder means for extracting said requested video channel from  
3 said video signal and demodulating said video channel from its modulated frequency to  
4 baseband.

1                   4.       The system as recited in claim 3, wherein after said decoder means  
2 demodulates said requested video channel to baseband, said decoder means then  
3 remodulates said requested video channel to said predetermined frequency.

1                   5.       The system as recited in claim 4, wherein said predetermined  
2 frequency comprises a frequency associated with a single television channel.

1                   6.       The system as recited in claim 1 comprising N end user sites and N  
2 channel formatting means, and wherein  $X=1$  to N, such that channel formatting means X  
3 modulates said output video signal for end user site X to a frequency associated  
4 associated with channel M, wherein  $M=X+1$ .

1                   7.       The system as recited in claim 6, wherein end user site 1 is furthest  
2 from said service module and end user site N is closest to said service module.

1                   8.       The system as recited in claim 1, wherein said filter means  
2 comprises a band pass filter.

1                   9.       The system as recited in claim 1, wherein said filtering means is  
2 configured with said coupling means.

1                   10.      The system as recited in claim 1, wherein said filtering means is  
2 configured in said customer interface device.

1                    11.    The system as recited in claim 1, wherein said telecommunication  
2 signals comprise telephony signals, and said service module further comprises telephony  
3 interface means for connecting telephone calls between a telephony service provider and  
4 a telephone connected to a customer interface device at an end user site, wherein when a  
5 service request from an end user site comprises a request to connect a telephone call from  
6 said end user site to another party having telephone services, said processing means  
7 checks to determine if said end user site is authorized for telephony services, and if said  
8 end user site is authorized for said telephony services, said telephony interface means of  
9 said service module connects said user telephone call to said telephony service provider,  
10 which in turn, connects said telephone call to said another party.

1                    12.    The system as recited in claim 11, wherein said telephony interface  
2 means of said service module connects said end user site telephone call to said headend  
3 system, which in turn, connects said end user site telephone call to said telephony service  
4 provider, which in turn, connects said telephone call to said another party.

1                    13.    The system as recited in claim 1, wherein said telecommunication  
2 signals comprise computer data signals, and said service module further comprises  
3 computer network interface means for connecting a computer connected to a customer  
4 interface device at an end user site to a computer network, wherein when a service request  
5 from an end user site comprises a request to connect said computer at said end user site to  
6 said computer network, said processing means checks to determine if said end user site is  
7 authorized for computer network interface services, and if said end user site is authorized  
8 for said services, said computer network interface means of said service module provides  
9 a data connection between said network and said computer connected to said customer  
10 interface box at said end user site.

1                    14.    The system as recited in claim 13, wherein said computer network  
2 interface means of said service module connects said computer connected to said  
3 customer interface device to said headend system, which in turn, connects said computer  
4 to said computer network.

1                    15.    The system as recited in claim 1, wherein said telecommunication  
2 signals comprise forward path data signals, which may include one or more of telephony  
3 signals, computer data signals, and information messaging signal, and wherein said

4 forward path data signals are transmitted from said service module to a customer interface  
5 device at an end user site at baseband.

1 16. The system as recited in claim 1, wherein said telecommunication  
2 signals comprise forward path data signals, which may include one or more of telephony  
3 signals, computer data signals, and information messaging signal, and wherein said  
4 forward path data signals are transmitted from said service module to a customer interface  
5 device at an end user site by modulating said forward path data signals to one or more  
6 frequencies corresponding to one or more channel frequencies and transmitting said  
7 forward path data signals to said customer interface device at said one or more channel  
8 frequencies.

1 17. The system as recited in claim 1, wherein return path data signals  
2 from said customer interface device may include one or more of telecommunication  
3 service request signals, telephony signals, computer data signals, said information  
4 messaging signals, and wherein said return path data signals are transmitted from said  
5 customer interface device to said service module by modulating said return path data  
6 signals to one or more frequencies corresponding to one or more channel frequencies and  
7 transmitting said return path data signals to said service module at said one or more  
8 channel frequencies.

1 18. The system as recited in claim 1, wherein return path data signals  
2 from said customer interface device may include one or more of telecommunication  
3 service request signals, telephony signals, computer data signals, said information  
4 messaging signals, and wherein said return path data signals are transmitted from said  
5 customer interface device to said service module by modulating said return path data  
6 signals to one or more frequencies between about 4 MHz and about 40 MHz and  
7 transmitting said return path data signals to said service module at said one or more  
8 frequencies.

1 19. The system as recited in claim 1, wherein return path data signals  
2 from said customer interface device may include one or more of telecommunication  
3 service request signals, telephony signals, computer data signals, said information  
4 messaging signals, and wherein said return path data signals are transmitted from said  
5 customer interface device to said service module by transmitting said return path data

6 signals over a communication path which is separate from the communication path in  
7 which signals are transmitted from said service module to said customer interface device.

1                   20.     A method for providing telecommunication services, including  
2 video, telephony and computer network services, to a group of end user sites connected to  
3 a loop-through cable distribution system, comprising the steps of:

4                   a service module receiving telecommunication services in the form of  
5 telecommunication signals, including a video signal, from a headend system;

6                   said service module receiving a telecommunication service request from  
7 one or more end user sites, said service request being a request for a video channel;

8                   splitting said video signal into a plurality of video signal, one for each of  
9 said end user sites;

10                  for each end user site requesting a video channel, demodulating said video  
11 channel from its modulated frequency in said video signal to baseband;

12                  creating an output video channel for each end user site requesting a video  
13 channel by remodulating said video signal from baseband to a predetermined frequency,  
14 said predetermined frequency being different for each of said end user sites;

15                  summing said output video channels into a composite video signal  
16 comprising each of said output video channels modulated to different frequencies;

17                  communicating said composite video signal to each of said end user sites;

18                  at each of said end user sites requesting a video channel, creating an end  
19 user video signal by extracting said output video channel for said end user site from said  
20 composite video signal; and

21                  communicating said end user video signal to a customer interface box and  
22 then to a video signal viewing apparatus.